Remarks/Arguments:

Claims 1, 3, 4, 6, 7, 9, 10 and 12-19 are pending in the application. Claims 4, 6, 7, 9, 10, 12, 14, 15 and 17-19 are allowed. Claim 1 is rejected. Claims 3, 13 and 16 are objected to. No claims have been amended.

Applicant's representatives would like to thank the Examiner for the telephone interview of August 13, 2009. During the telephone interview, Applicant's representatives explained that the IFFT computing unit (recited in claim 1) is in the receiver (not the transmitter). Applicant's representatives also explained that performing the IFFT in the receiver allows transmission line characteristics to be computed from the received pilot symbols. Specifically, Applicant's claim 1 relates to an IFFT unit in the receiver whereas the art of record teaches an IFFT unit in the transmitter (standard OFDM modulation).

On page 2, the Official Action rejects claim 1 based under 35 U.S.C. § 103(a) as being unpatentable over Meyer (US 7,173,983) in view of Nokes (EP 1043874) and further in view of Larsson (US Publication 2002/011877). It is respectfully submitted, however, that the claims are patentable over the art of record for at least the reasons set forth below.

Applicant's invention, as recited by claim 1, includes features which were neither disclosed nor suggested by the art of record, namely:

> **... an IFFT computing unit for performing an IFFT computation for a transmission line characteristic calculated from the pilot signal ...**

Claim 1 relates to computing the IFFT of a received pilot signal. Specifically, the pilot signal is received by the detecting device after being altered by the transmission line characteristics (after it has been transmitted). Thus, the IFFT of the received pilot signal is computed to obtain the transmission line characteristics. Support for this feature can be at least found on pages 13-16 of Applicant's specification and furthermore in Figs. 1 and 4. No new matter has been added.

On page 3, the Official Action suggests that Myer teaches Applicant's recited IFFT computing unit. Specifically, the Official Action cites column 1, lines 5-25, of Meyer where an IFFT is computed ("*the N coefficients are processed by inverse fast Fourier transform (IFFT),*

which generates a "symbol" formed of a sum of modulated carriers, each carrier having the amplitude and the phase determined by the associated complex coefficient. The symbol thus generated is transmitted and a receiver submits it to the inverse processing, that is, a fast Fourier transform (FFT) to restore the initial complex coefficients"). Applicant, however, respectfully disagrees with the Examiner's interpretation of Meyer. As stated in column 1, lines 23-30, the IFFT is computed on the pilot symbols in the transmitter (IFFT is used to generate the OFDM signal). The IFFT of the pilot symbols is computed before the pilot symbols are transmitted. Thus, the IFFT computation disclosed by Meyer can not compute the transmission line characteristics from the pilot signal (the pilot signals have not been altered by the transmission line characteristics because they have not been transmitted yet). In Meyer's receiver shown in Fig. 8, when the pilot symbols are received after being altered by the transmission line characteristics (after transmission), an FFT is performed to demodulate the OFDM signal (not an IFFT). Computing the IFFT of the pilot signal before transmission and then the FFT of the pilot signal after reception is standard practice (IFFT modulates pilots in the transmitter while FFT demodulates pilots in the receiver). Computing the IFFT of the pilot signal in the receiver is not standard practice, and is not suggested by the art of record.

In similar art, Larsson teaches an OFDM system that transmits pilot symbols. Similar to Meyer, Larsson's transmitter as shown in Fig. 3, inputs the pilot symbols P(k) to the IFFT computation block 308. These IFFT of these pilot symbols, however, are computed in the transmitter and therefore the transmission line characteristics can not be calculated.

Applicant's claim 1, is different than the art of record because the IFFT is computed in the receiver based on the received pilot signals which indicate the transmission line characteristics ("*an IFFT computing unit for forming an IFFT computation for a transmission line characteristic calculated from the pilot signal*"). For example, as shown in Applicant's Fig. 1, the OFDM signal is received by tuner 1. The OFDM signal is then demodulated in the standard manner by FFT computing unit 4. After the OFDM signal is demodulated, the received pilot symbols are extracted by pilot extractor 5 and input to IFFT computing unit 8. IFFT computing unit 8 computes the IFFT of the received pilot symbols. This allows IFFT computing unit 8 to extract the transmission line characteristics inherent in the pilot signals (the received pilot signals have been altered by the transmission line characteristics). These features are at least supported on page 13, line 20, to page 15, line 25 ("*Tuner 1 selects OFDM signal received... Pilot extractor 5 extracts a pilot signal...IFFT computing unit 8 performs an IFFT computation for*

a signal representing the transmission line characteristic calculated by pilot extractor 5 ... Fig. 4 illustrates the results of an IFFT computing process to the pilot signal in Fig. 3 in this embodiment...grasping the propagation characteristics of a signal"). Thus, Applicant's system computes the IFFT of the pilot signals upon reception of the pilot signals. This allows the transmission line characteristics to be extracted. These computations and results are not possible in the art of record, because the art of record does not compute the IFFT of the pilot symbols upon reception (the prior art computes the IFFT of the pilot symbol at transmission).

Neither Meyer, Nokes nor Larsson suggest the features of Applicant's claim 1. Thus, the combination or Meyer, Nokes and Larsson is deficient. Accordingly, for the reasons set forth above, claim 1 is patentable over the art of record.

Claims 3, 13 and 16 include all the features of claim 1 from which they depend. Thus, claims 3, 13 and 16 are also patentable over the art of record for at least the reasons set forth above.

In view of the arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,

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